REMARKS

Claims 1-6, 9, 11-14, 16-18, 20-33, 35-38, 40-42 and 44 are pending in the present Application. Claims 33 has been amended, leaving Claims 1-6, 9, 11-14, 16-18, 20-33, 35-38, 40-42 and 44 for consideration upon entry of the present Amendment. The Specification has been amended to correct certain typographical errors.

Claim 33 has been amended to recite that the substrate layer has a thickness of 0.2 millimeter to 2.5 millimeters, and that the poly(arylene ether) is atactic crystal polystyrene, as supported by claims 6 and 14 as originally filed. Claim 33 has also been amended to recite that wherein the optical layer has a thickness of 25 micrometers to 0.6 millimeters. Support for this amendment can at least be found in Claim 20as originally filed

No new matter has been introduced by these amendments or new claims. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 103(a)

To briefly recap, the present invention is directed to a data storage medium comprising a substrate layer comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin. The substrate layer comprises a surface comprising lands and grooves, wherein the lands and grooves comprise a pitch of about 0.05 to about 0.35 micrometer.

There presently exist very limited materials and methods that consistently and reliably meet the specifications required of data storage media having high areal density capabilities. Hence, there remains a need in the art for a data storage medium construction that maximizes the dimensional stability and groove dimension replication of the disk substrate. The data storage medium of the present invent can provide a land and groove replication of greater than or equal to about 90 percent, which is not necessarily expected, even when comprising lands and grooves that comprise a pitch of about 0.05 to about 0.35 micrometer.

Furthermore, it is apparent that the material alone does not determine the useful properties of a material. The processing of the material used in the data storage media can effects its usability or advantages.

For example, minimizing the change in data disk media tilt as the assembly is exposed to various environmental conditions is important for the retention of disk performance. Time, temperature, and humidity all play a role in affecting the tilt of an assembly comprising layers of material that exhibit differential rates of shrinkage or expansion when exposed to varying environmental conditions. Predictive tests for determining dimensional stability of a data disk assembly may be made by thermal aging the disk assembly at 80°C for a predetermined time followed by measuring the radial tilt.

The present invention discloses a data storage medium comprising a substrate composition that reduces radial tilt caused by heat and/or humidity while at the same time maximizing the degree of substrate replication. The term "tilt" refers to the number of radial degrees by which a data storage medium bends on a horizontal axis, and is typically measured as the vertical deviation at the outer radius of the storage medium. Typically, the maximum acceptable tilt range measured at a radius of 55 millimeters is about 0.50 degrees, and advantageously, about 0.35 degrees. (Typically the radial tilt is determined by measuring the deflection of a laser beam incident at some angle to the disk, as more fully explained in the present specification.)

As shown by the examples and comparative experimentation in the present specification, the data storage medium of the present invention can obtain a tilt of less than or equal to 0.35 degrees measured at a radius of 55 millimeters after 10 hours in a 90 percent relative humidity. (Independent claim 33 as well as dependent Claim 28 and Claim 40.)

Contrary to the allegations in the obviousness rejections, it is not expected that the present composition would achieve these results. The research reflected in the Examples indicate that these results can only be achieved based on several factors which are disclosed for the first time by Applicants based on significant research.

Obviousness Rejection over Nirwano + Daecher + Inuoe + Hashizume.

Claims 1-3, 5-6, 11-14, 16-18, 20, 21, 27-30, 42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 4,845,142 (Niwano, et al.) and United States Publication No. 2003/0113671 (Ohgo), further in view of United States Patent No. 6,183,829 (Daecher, et al.), United States Patent No. 5,683,630 (Inuoe) and WO 02/059173 (Hashizume, et al.) (US 2004/0077795 is the English equivalent). (06/19/2008 Office Action page 2, paragraph number 3.) Applicants respectfully traverse this rejection.

The Office Action states that Niwano et al. (hereafter "Niwano") discloses a substrate comprising a 50:50 ratio of poly(dimethyl-1, 4-phenylene) ether and polystyrene to form a substrate with grooves with a pitch of 1.6 microns. The Office Action states that important molding conditions include resin temperature, injection pressure, and mold temperature to control the birefringence. (06/19/2008 Office Action page 3, lines 1-3.)

The Office Action does not mention any deficiencies of Niwano. Nevertheless, Ohgo is cited for teaching optical recording media using SIL heads with a 413 nm laser in which the optical disk master has a pitch of 0.32 microns. The Office Action also states that Daecher et al. (hereafter "Daecher") teaches the use of filtration with a 5 micron metal fiber melt filer.

The Office Action further states that Inoue teaches injection molding using clamping forces of 40 ton, and Hashizume et al. (hereafter "Hashizume") discloses various molding processes.

The Office Action apparently attempts to pull these various diverse disclosures together, by stating:

> It would have been obvious to one skilled in the art to modify the cited example of Nirwano et al. '142 by using the molding process disclosed with an insert which allows the formation of other grooves with smaller pitches such as those taught by Ohgo '671 with a reasonable expectation of forming a useful optical recording medium…based upon the disclosure of the injection molding apparatus ….taught by Inoue '630 and to modify the process rendered obvious by the combination of Nirwano et al. '142 and Ohgo '671 by using melt filtering to remove particulates having sizes of more than 5 microns as described by Daecher et al. '829…with a

> reasonable expectation of forming substrates with a degree of replication of more than 90% based upon the direction of Hashizume et al.....(06/19/2008 Office Action, page 4, lines 4-16.)

Applicants respectfully submit that the Office Action has not considered each of the references as a whole. Niwano is indeed directed to optical disk substrates and lenses prepared by molding a resin composition comprising a polymer composed of aromatic vinyl monomer units and a polyphenylene ether. (Niwano, Abstract) However, it is clear that the composition of Niwano does not teach the present invention. Clearly the limitations of claims 1, 2, 3, 5, 6, 11, 16, and 17, 20, 21, 27-28, 42 and 44 are not met. Niwano states, in paragraph [0019], that the track pitch is 0.74. Furthermore, since Nirwano mentions measuring light transmittance at a wavelength of 800 nm, Niwano's optical storage media would not provide lands and grooves that comprise a pitch of 0.05 to 0.35 micrometer, wherein the lands have a width of 10 to 100 nanometers or the grooves have a height of 10 to 100 nanometers, and wherein the data on the data layer can be read using a laser having a wavelength of less than about 420 nanometers, as specified in present claims 42, 44, and various dependent claims. Nor does Nirwano discuss the tilt properties of an optical layer as in present claims 20, 21, or Independent claim 33. Furthermore, since the example of Nirwano has no polycarbonate optical layer, the tilt angle even assuming arguendo it were considered would not teach the limitations of claims 22-23, 33, and 38, which require a polycarbonate optical layer. Also, importantly, Nirwano does not provide a data storage medium exhibiting a radial tilt change as specified in claims 27-28 and independent claim 33 (as well as claims 35-37 dependent on claim 33.

The main purpose of Nirwano's substrate composition is to obtain low birefringence (col. 2, lines 17-38, and col. 2, line 66, to col. 3, line 7). The Examples in columns 6 to 10 of Nirwano provide no information or data regarding tilt properties.

Furthermore, Nirwano teaches away from a blend for the substrate layer of a data storage meter comprising poly(arylene ether) resin and poly(alkenyl aromatic) resin that is substantially free of visible particulate impurities, as require by all the rejected claims, let along particulate impurities greater than about 15 micrometers in size, as required by claim 11. Relevant to this important point, Nirwano, in col. 5, lines 11-16, states:

> The degree of mixing is such that particles sizes of both the mixed and dispersed polymers become desirable about 1 μor [sic, μm or] less, preferably of molecular order. Whether the molecular order dispersion is reached can be readily judged by observing the mixture to exhibit a single glass transition temperature.

Clearly, this does not teach being "substantially free" (emphasis added) of visible particulate impurities. The Examiner's attention is drawn to Table 7, on page 61 of the present application, containing results based on experiments in which particulate impurities ranging in size from 5 to 100 micrometers present in compositions containing poly(arylene ether) resin and poly(alkenyl aromatic) resin were detected using a Pacific Instruments ABS2 analyzer which employs a laser light scattering technique. Clearly, based on the polymer processing taught by Nirwano such strict specifications would not be met. For example, Nirwano mentions filtering only once and only with respect to the poly(2,6-dimethyle-1,4-phenylene) ether, in col. 7, lines 65-68, in which the polymer was filtered as a precipitate from the reaction mixture. Obviously, such filtering is not intended to remove particulates, but rather to obtain them! Nirwano, in fact, takes no steps to remove particulates that are inherently formed. In contrast, as shown by the results of experimentation shown in Table 7, particulates are indeed formed in compositions of poly(arylene ether) resin and poly(alkenyl aromatic) resin (as shown by Comparative Examples 3 and 4), but can only be completely removed by going to much trouble. Specifically, as stated on page 56, paragraph numbers [00157], [00164] to [00165], and [00168] of the present application, it is stated:

> The polymer-solvent mixture emerged from the heat exchanger having a temperature of about 270-280°C and was fed through a parallel combination of two sintered-metal filters (PALL, 13-micrometer size pleated filters, surface area of about 1.5 ft^2 per filter (0.14 m^2) to remove particulate impurities within the feed solution. The temperature of the filter housings was maintained at about 280°C....
>
> Comparative Example 2 (CE-2) was prepared similarly to Example 8, with some modifications, most importantly the PPE-xPS solution was filtered only once by gravity filtration through a filter bag..... The solution was not superheated in a shell-and-tube heater and was not filtered through a combination of two sintered-metal filters prior to isolation of the polymeric material from the solvent.....
>
> The results of the above experiments show that the method used in Example 8 resulted in PPE-xPS material having significantly reduced amounts of particulate impurities when compared to Comparative Example 2. The additional filtration of the solution of Example 8 through a 13 micrometer sintered metal filter resulted in a

material having greatly reduced amounts of particulate impurities having sizes of 15 micrometers or smaller.

Still further experiments were performed to establish this finding. Four example runs (Example runs 9-12) were performed to illustrate the method of melt filtering a melt comprising polyphenylene ether and polystyrene to form a polymeric material having reduced levels of particulate impurities The compounded material was fed to a single screw extruder equipped with a sintered metal filter (PALL, 3 micrometer pores, candle geometry) located at the extruder die head. Samples from the runs of Examples 9-12 were tested for visual particulates. The results of the visible particle analysis for Example runs 9-12 are found in Table 9, on page 64 of the application. Samples of Examples 10-12 all exhibited on average less than 1 particle per gram as large as 40 microns, whereas comparison Example 3 contained 24 particles. Similarly, Examples 10-12 exhibited no more than 44 particles of 15 micron size, whereas comparative Example 3 exhibited 500 particles!

Another interesting point, shown by Table 9 is that this result cannot be generalized to all polymers. The optical quality polycarbonate did not exhibit the same problem of particulate impurities.

Furthermore, Nirwano fails to disclose the pitch of 0.05 to 0.35 μm of claim 1 and the width of 10 to 200 nanometers, or 10 to 100 nanometers, of claims 2 and 3. Likewise claims 4 and 5 are outside the specifications of Niwano.

Thus, it can be clearly stated that Nirwano cannot teach the present invention and, in fact, teaches a composition that can be expected to fail, not unsurprisingly considering the dearth of alternatives to the use of polycarbonate substrates.

Ohgo does not correct the above noted deficiencies of Niwano. Ohgo is directed to a manufacturing method for an optical disc master. This reference does not disclose a substrate prepared from a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin, only acrylic resin or polycarbonate resin. (Ohgo, [0012]) Although a polycarbonate coating layer over a data layer is disclosed, there is no mention of combining a polycarbonate layer with a substrate of different material (Ohgo, [0072]) Hence, without a suggestion and an expectation of success to

use a polycarbonate optical layer with a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin, a proper showing for obvious cannot be found.

Similarly, Daecher does not correct the deficiencies of Nirwano or Nirwano in view of Ohgo. Daecher is directed to an apparatus to form a plastic sheet in a continuous fashion for optical and electronic display applications. (Daecher, Abstract) Optical storage media are disclosed where the substrate is particularly homopolymers and copolymers of polycarbonate, polystyrene, polyacrylic, polyester, polyolefin, polyacrylate, and mixtures thereof. (Daecher, Column 6, lines 7-11) The substrate can be coated with a protective layer of lacquer or resin. (Daecher, Column 6, lines 3-7) Although polyphenylene oxide and polystyrenes are disclosed in a long list of thermoplastic resins that can be formed into a plastic sheet using the Daecher apparatus (Column 14), nowhere does the reference teach a mixture of these resins as a data storage media substrate in combination with a polycarbonate optical layer. Hence, Daecher, combined with the teaching of the other two references, does not lead one of ordinary skill to expect success when using a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin in combination with a polycarbonate optical layer.

The Office Action refers to the use, in Daecher, of filtration with a 5 micron metal fiber filter (pleated candle type), in Example 5, column 17, lines 44-46. Since Example 5 of Daecher is directed to a polycarbonate blend sheet which is embossed/stamped, not used in injection molding, the process does not apply to the present optical recording media.

Furthermore, Daecher fails to predict the unexpected superiority of the present invention. In fact, the present specification discloses a comparison to optical storage media using polycarbonates such as used in Daecher. See comparative Example 1, page 47 of the present application, in which a data disk assembly was prepared from a 1.1 millimeter (mm) thick substrate made from bisphenol-A polycarbonate resin (OQ1050, Optical quality polycarbonate available from GE Plastics) onto which was sputtered a thin aluminum reflective data layer. As illustrated in Examples 1 and 2 of the present application, on pages 47-49, the disk assemblies prepared from a poly(phenylene ether)/polystyrene blend substrate and a polycarbonate film exhibited significantly less radial tilt under high humidity conditions as compared to the assembly prepared from a polycarbonate substrate and a polycarbonate film (Comparative

Example 1). This minimum tilt is desired for the maintenance of the integrity of the data read/write capability. Thus, the comparative data in the present application rebuts the expectations of Daecher.

Inoue, cited for teaching clamping forces, fails to correct the above-noted deficiencies of the above references. Inuoe generally discloses the following:

> A process for producing high-density thin type optical disk substrates having good replicability and birefringence sufficient for practical use. In filling the resin into the cavity, the stress on the resin is reduced by controlling the relation of the cavity width and the injection compression force to reduce birefringence. Further, the mirror surface of the mold is maintained at a certain temperature to facilitate the resin flow and a good replicability and reduction of birefringence is achieved by terminating the resin filling and starting the compression process at the time at which the pressure of the resin filling is at a minimum. (Inuoe, Abstract)

Polycarbonate is disclosed as the disk substrate and not a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin. Optical layers combined with the substrate layer do not seem to be disclosed in Inuoe. Again, Inuoe, combined with the teaching of the other references, does not lead one of ordinary skill to expect success when using a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin in combination with a polycarbonate optical layer.

Hashizume, cited for teaching a molding process, also does not correct the above-noted deficiencies of the previously cited references. Hashizume does not teach or suggest the use of a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin for use in substrates in combination with a polycarbonate optical layer. Indeed, Hashizume teaches away from using polycarbonate in any disk substrate for "its high birefringence and distortion of disks due to moisture absorption," especially in regard to higher capacity recording disks (e.g., magneto-optical recording disks, digital versatile disks, and disks using blue laser optical equipment. (Hashizume, US 2004/0077795 [0003]) Indeed, the recognition that polycarbonate tends to distort under moist conditions would suggest to one of skill in the art to reconsider using a polycarbonate optical layer as it may exhibit poor dimensional stability under highly humid conditions. It is noted that claims 27-28, which ultimately depend from claim 1, require the data storage medium to meet a specified radial tilt change value after 96 hours at 80°C. Based on

Hashizume, one of skill in the art would not expect success in minimizing radial tilt when polycarbonate is used. Accordingly, Hashizume in combination with the other cited references fail to render obvious claims 1-3, 5-6, 11-14, 16-18, 20-21, 27-30, 42 and 44 as none of the references teaches each and every element of the claims. Furthermore, the combined references fail to show an expectation of success to prepare a data storage medium comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin of a specified ratio in combination with a polycarbonate optical layer. Reconsideration and removal of the rejection are respectfully requested.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

"A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art." *KSR Int'l Co. v. Teleflex Inc.,* 127 S.Ct. 1727, 1741 (2007). To find obviousness, the Examiner must "identify a reason that would have prompted a person of ordinary skill in the art in the relevant field to combine the elements in the way the claimed new invention does." *Id.*

Additionally, the requirement for a determination of obviousness is that "both the suggestion and the expectation of success must be founded in the prior art, not in applicant's disclosure". *In re Dow Chem.*, 837 F.2d 469, 473, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988). An Examiner thus cannot base a determination of obviousness on what the skilled person in the art might try or find obvious to try. Rather, the proper test requires determining what the prior art would have led the skilled person to do, with a reasonable expectation of success.

Obviousness Rejection over Nirwano + Daecher + Inuoe + Hashizume + Saito.

Claims 1-6, 11-14, 16-18, 20, 21, 25, 27-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 4,845,142 (Niwano, et al.) and United States Publication No. 2003/0113671 (Ohgo), in view of United States Patent

No. 6,183,829 (Daecher, et al.), United States Patent No. 5,683,630 (Inuoe) and WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent], further in view of United States Publication No. 2003/0003261 (Saito, et al.). Applicants respectfully traverse this rejection.

This rejection differs from the previous rejection in the addition of Saito et al. (hereafter "Saito"). This reference is apparently intended to teach the use of a cover layer. As such Saito does not correct the deficiencies of Niwano, which is apparently the only reference teaching the composition of the substrate. The claims are, therefore, patentable for the reasons stated above.

In particular, Saito generally discloses an optical recording medium including a substrate having successively disposed thereon a light-reflecting layer, a recording layer and a cover layer, with recording and playback being effected by irradiating the medium with a laser beam having a wavelength of 450 nm or less from the side disposed with the cover layer, wherein a sputter layer having a thickness of 1 to 80 nm is formed between the recording layer and the cover layer, and the sputter layer and the cover layer are adhered with an adhesive. (Saito, Abstract) Saito does not teach or suggest a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin (PAE/PAA), let alone a data storage medium comprising a PAE/PAA substrate in combination with a polycarbonate optical layer. Although polycarbonate is taught as a resin for the substrate [0019] or a cover layer [0060], it is not suggested for use as an optical layer for a PAE/PAA substrate. (Saito). In view of the combined teachings of Saito, Niwano, Ohgo, Daecher, Inuoe, and especially Hashizume's teaching away from using polycarbonate in a recording disk, one of skill in the art would not expect success in using a polycarbonate optical layer in combination with a PAE/PAA substrate in a data storage medium. Accordingly, claims 1-6, 11-14, 16-18, 20-21, 25, 27-31, 33, 35-38, 40-42 and 44 have not been rendered obvious. Reconsideration and removal of the rejection are respectfully requested.

The use of polycarbonate is of relevance for more specifically identifying the tilt. As such it further supports the unexpected properties.

Obviousness Rejection over Nirwano + Daecher + Inuoe + Hashizume + Saito + Ueda or Ito + Ogawa.

Claims 1-6, 11-14, 16-18, 20-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 4,845,142 (Niwano, et al.) and United States Publication No. 2003/0113671 (Ohgo), in view of United States Patent No. 6,183,829 (Daecher, et al.), WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent] and United States Publication No. 2003/0003261 (Saito, et al.), further in view of JP 2000-315891 (Ueda. et al.) or EP 1178068 (Ito, et al.) combined with United States Publication No. 2001/0039313 (Ogawa, et al.). Applicants respectfully traverse this rejection.

Ito generally discloses a method for producing a starting material for polycarbonate resin and for producing polycarbonate resin. (Ito, Abstract) Ito does not teach or suggest using a polycarbonate optical layer in combination with a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin to prepare a data storage medium. Ueda generally discloses compounding polystyrene glycol with an aromatic polycarbonate resin for use as a substrate for high density optical disk. (Ueda, Abstract) Ueda does not teach or suggest using a polycarbonate optical layer in combination with a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin to prepare a data storage medium. Ogawa generally discloses a polycarbonate resin for use in optical disks. (Ogawa, [0002]) Ogawa does not teach or suggest using a polycarbonate optical layer in combination with a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin to prepare a data storage medium.

In view of the combined teachings of the references and especially in view of Hashizume's teaching away from using polycarbonate in a recording disk, one of skill in the art would not expect success in using a polycarbonate optical layer in combination with a substrate comprising a blend of poly(arylene ether) resin and poly(alkenyl aromatic) resin in a data storage medium. Accordingly, claims 1-6, 11-14, 16-18, 20-31, 33, 35-38, 40-42 and 44 have not been rendered obvious. Reconsideration and removal of the rejection are respectfully requested.

This rejection differs from the above rejection by the citation of Dris et al. (hereafter "Dris") for disclosing silicon hardcoats and copolycarbonate esters.

Obviousness Rejection over Nirwano + Daecher + Inuoe + Hashizume + Saito + Ueda or Ito + Ogawa + Dris.

Claims 1-6, 11-14, 16-18, 20-33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Patent No. 4,845,142 (Niwano, et al.) and United States Publication No. 2003/0113671 (Ohgo), in view of United States Publication No. 2003/0003261 (Saito, et al.), WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent], United States Patent No. 6,183,829 (Daecher, et al.), United States Patent No. 5,683,630 (Inuoe), JP 2000-315891 (Ueda. et al.) or EP 1178068 (Ito, et al.) and United States Publication No. 2001/0039313 (Ogawa, et al.), further in view of WO 03/021588 (Dris, et al.). Applicants respectfully traverse this rejection.

As discussed above, Niwano, Ohgo, Saito, Hashizume, Daecher, Inuoe, Ueda, Ito, and Ogawa fail to render obvious independent claims 1, 33, 38, 42 and 44 or their dependent claims as the references fail to teach or suggest a data storage medium comprising 1) a substrate comprising poly(arylene ether) resin and poly(alkenyl aromatic) resin (PAE/PAA) of a specified ratio in combination with a polycarbonate optical layer; and 2) the PAE/PAA substrate having the exacting dimensions for the land and groove features of the PAE/PAA substrate layer along with a high level of percent replication of mold features. Further, the references fail to provide some suggestion or incentive that would have motivated a skilled artisan to modify or combine the references to result in a data storage medium having the combination of a PAE/PAA substrate of a specified ratio in combination with a polycarbonate optical layer. Dris also fails to provide the requisite teaching/suggestion absent from the other references.

Dris generally discloses a data storage medium, and in particular to a data storage medium comprising at least one high (Young's) modulus layer used to control the overall degree of flatness in the storage medium. (Dris, Abstract) The reference does not teach or suggest a data storage medium prepared from a substrate of a specified ratio of PAE/PAA and a polycarbonate optical layer as is required by the instant claims.

In view of the combined teachings of the references and especially in view of Hashizume's teaching away from using polycarbonate in a recording disk, one of skill in the art would not expect success in using a polycarbonate optical layer in combination with a PAE/PAA substrate of a specified ratio in a data storage medium. Accordingly, claims 1-6, 11-14, 16-18, 20-33, 35-38, 40-42 and 44 have not been rendered obvious. Reconsideration and removal of the rejection are respectfully requested.

Obviousness Rejection over Feist + Daecher + Inuoe + Hashizume + Ohgo.

Claims 1-6, 5-6, 11-14, 16-18, 20, 21, 27-30, 42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Publication No. 2002/0094455 (Feist, et al.), United States Patent No. 6,183,829 (Daecher, et al.), United States Patent No. 5,683,630 (Inuoe), WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent] and United States Publication No. 2003/0113671 (Ohgo). Applicants respectfully traverse this rejection.

As discussed above, Daecher, Inuoe, and Ohgo fail to render obvious independent claims 1, 33, 38, 42 and 44 or their dependent claims as the references fail to teach or suggest a data storage medium comprising 1) a PAE/PAA substrate of a specified ratio in combination with a polycarbonate optical layer; and 2) the PAE/PAA substrate having the exacting dimensions for the land and groove features of the PAE/PAA substrate layer along with a high level of percent replication of mold features. Further, the references fail to provide some suggestion or incentive that would have motivated a skilled artisan to modify or combine the references to result in a data storage medium having the combination of a PAE/PAA substrate of a specified ratio in combination with a polycarbonate optical layer. Feist also fail to provide the requisite teaching/suggestion absent from the other references.

Feist generally discloses poly(arylene ether) data storage media. Feist is further from the present invention than Nirwano discussed above. Feist does not disclose a data storage medium having lands and grooves comprising a pitch not more than 0.35 microns. There is no teaching of filtering out particulate impurities as required by the present claims. The Examples 1 to 8 make clear that compositions having no visible particulate impurities, in fact, are not obtained. No experimental testing was done to show that the combination with a polycarbonate optical film

resulted in improved tilt. Therefore, Feist cannot teach the unexpected results obtained in the present invention.

Obviousness Rejection over Feist + Daecher + Ohgo + Saito.

Claims 1-6, 11-14, 16-18, 20, 21, 25, 27-31, 33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Publication No. 2002/0094455 (Feist, et al.), United States Patent No. 6,183,829 (Daecher, et al.), WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent] and United States Publication No. 2003/0113671 (Ohgo), in view of United States Publication No. 2003/0003261 (Saito, et al.). Applicants respectfully traverse this rejection.

This rejection differs from the previous rejection by the addition of Saito et al. for the use of a protective layer. The claims are unobvious, therefore, with respect to the same reasons stated above with respect to the same references.

Obviousness Rejection over Feist + Daecher + Inuoe + Ohgo + Ueda or Ito + Ogawa.

Claims 1-6, 11-14, 16-33, 35-38, 40-42 and 44 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over United States Publication No. 2002/0094455 (Feist, et al.) combined with United States Patent No. 6,183,829 (Daecher, et al.), WO 02/059173 (Hashizume, et al.) [US 2004/0077795 is the English equivalent] and United States Publication No. 2003/0113671 (Ohgo), further in view of JP 2000-315891 (Ueda, et al.) or EP 1178068 (Ito, et al.) combined with United States Publication No. 2001/0039313 (Ogawa, et al.). Applicants respectfully traverse this rejection.

This rejection differs from the earlier rejection by the addition of Ito or Ueda and Ogawa for disclosing various polycarbonates. The claims are unobvious, therefore, with respect to the reasons stated above with respect to the same references.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing that all elements of the invention are disclosed in the prior art; that the prior art relied upon, or knowledge generally available in the art at the time of the invention, must provide some suggestion or incentive that would have motivated the skilled artisan to modify a reference

or combined references; and that the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was make. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The obviousness inquiry also requires consideration of common knowledge and common sense. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1742-43 (2007); *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1367 (Fed. Cir. 2006) ("Our suggestion test is in actuality quite flexible and not only permits, but requires, consideration of common knowledge and common sense.") Shorten as needed

Reconsideration and withdrawal of this rejection are respectfully requested.

Nonstatutory Double Patenting Rejections

Claims 1-6, 11-14, 16-18, 20-33, 35-38, 40-42 and 44 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-32 of copending Application No. 10/648540 (US 2005/0046056) in view of United States Publication No. 2002/0094455 (Feist, et al.), United States Patent No. 6,183,829 (Daecher, et al.) and United States Publication No. 2003/0113671 (Ohgo). As neither case has been issued or allowed, and since the claims are therefore not final in either case, it is not possible to make any determination as to double patenting or obviousness at this time. Hence, withdrawal of this rejection at least until the present claims are allowed and the 10/648540 case has issued, is respectfully requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 50-1131.

Respectfully submitted,

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